

Having described the invention, the following is claimed:

1. A tire parameter sensing system for a vehicle having at least one tire, the tire parameter sensing system comprising:

5 a tire-based unit associated with the at least one tire and including structure for sensing a parameter of the at least one tire and for transmitting a parameter signal indicative of the sensed parameter, the parameter signal having at least first and second different signal characteristics;

10 a vehicle-based unit having first and second receiving channels and a signal detection portion, the first receiving channel receiving at least portions of the parameter signal that include the first signal characteristic and providing a first data signal
15 indicative thereof, the second receiving channel receiving at least portions of the parameter signal that include the second signal characteristic and providing a second data signal indicative thereof, the signal detection portion of the vehicle-based unit
20 receiving the first and second data signals and, in response to the first and second data signals,

determining the sensed parameter of the at least one tire.

2. The tire parameter sensing system of claim 1 wherein the first receiving channel is adapted to reject portions of the parameter signal having the second signal characteristic and the second receiving channel is adapted to reject portions of the parameter signal having the first signal characteristic.

3. The tire parameter sensing system of claim 1 wherein the first signal characteristic is a first signal frequency and the second signal characteristic is a second signal frequency that is different from the first signal frequency.

4. The tire parameter sensing system of claim 3 wherein the parameter signal is a frequency shifted keyed signal with the first signal frequency representing digital zeroes and the second signal frequency representing digital ones.

5. The tire parameter sensing system of claim 4 wherein the first receiving channel includes means for inverting the first data signal.

6. The tire parameter sensing system of claim 5 wherein the signal detection portion of the vehicle-based unit includes a controller and means for providing a digital one to the controller when one of the inverted first data signal and the second data signal indicate a digital one.

7. The tire parameter sensing system of claim 3 wherein the parameter signal is an On-Off Keyed signal, On-keyed portions of the parameter signal including both the first and the second signal frequencies.

8. The tire parameter sensing system of claim 7 wherein the vehicle-based unit includes means for combining the first and second data signals into a single signal.

9. The tire parameter sensing system of claim 8 wherein the first and second signal frequencies are images of one another and the vehicle-based unit includes an image reject mixer.

10. The tire parameter sensing system of claim 1 wherein the signal detection portion of the vehicle-based unit includes means for determining the signal parameter signal from a first portion of the first data signal and a second, different portion of the second data signal when the first and second portions collectively form the parameter signal in its entirety.

11. A method for monitoring a parameter of at least one tire of a vehicle, the method comprising the steps of:

sensing the parameter of the at least one tire;

transmitting a parameter signal indicative of the sensed parameter, the parameter signal including a combination of different first and second signal characteristics;

receiving at least portions of the parameter signal that include the first signal characteristic and providing a first data signal indicative thereof;

receiving at least portions of the parameter signal that include the second signal characteristic and providing a second data signal indicative thereof; and

determining the sensed parameter of the at least one tire in response to the first and second data signals.

12. The method of claim 11 wherein the step of receiving portions of the parameter signal that include the first signal characteristic further includes the step of rejecting portions of the parameter signal having the second signal characteristic and wherein the step of receiving portions of the parameter signal that include the second signal characteristic further includes the step of rejecting portions of the parameter signal having the first signal characteristic.

13. The method of claim 11 wherein the step of transmitting a parameter signal including a combination of different first and second signal characteristics further includes the steps of transmitting signal portions having a first signal frequency and transmitting signal portions having a second, different signal frequency.

14. The method of claim 13 wherein the step of receiving portions of the parameter signal that include the first signal characteristic further includes the steps of receiving the signal portions having the first signal frequency and rejecting signal portions having the second signal frequency, and wherein the step of receiving portions of the parameter signal that include the second signal characteristic further includes the step of receiving the signal portions having the second signal frequency and rejecting signal portions having the first signal frequency.

15. The method of claim 13 wherein the step of transmitting a parameter signal including a combination of different first and second signal characteristics further includes the step of transmitting the parameter signal as a frequency shifted keyed signal with the first signal frequency representing digital zeroes and the second signal frequency representing digital ones.

16. The method of claim 13 wherein the step of transmitting a parameter signal including a combination of different first and second signal characteristics further includes the step of transmitting the parameter signal as an On-Off Keyed signal with On-keyed portions of the parameter signal including both the first and the second signal frequencies.

17. The method of claim 16 wherein the step of transmitting the parameter signal as an On-Off Keyed signal with on-keyed portions of the parameter signal including both the first and the second signal frequencies further includes the step of alternating signal portions having the first signal frequency with signal portions having the second signal frequency to form the on-keyed portion of the parameter signal.

18. The method of claim 16 wherein the step of determining the sensed parameter of the at least one tire further includes the steps of combining the first and second data signals into a single signal, and analyzing the single signal for the sensed parameter.